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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/502,718	02/11/2000	Ludmila Cherkasova	10992578-1	5563

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EXAMINER

NGUYEN, CHAU T

ART UNIT	PAPER NUMBER
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2142

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DATE MAILED: 04/08/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

PR4

# Office Action Summary

Application No.

09/502,718

Applicant(s)

CHERKASOVA ET AL.

Examiner

Chau Nguyen

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 03 February 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_ 6) ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

1. Amendment A, received on 02/03/2003, has been entered. Claims 1-12 are presented for examination.

#### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yu, U.S. Patent No 6,351,775 and further in view of Desai, U.S. Patent No. 6,434,608.

4. As to claim 1, Yu discloses a method for operating a server cluster comprising N server nodes to service client requests, each client request being directed to one of a plurality of sites hosted on said server cluster, each site being identified by a domain name and each server node being identified by an address on a network connecting said clients to said server nodes (Abstract), said method comprising the steps of:

grouping said sites into N groups, each group being assigned to a corresponding one said server nodes such that for each pair of groups, the difference in the sum of said measured computational resources is within a first predetermined error value (col. 6, lines 31-36; col. 7, lines 18-37; and col. 9, lines 27-33: denote  $SA(j)$  as the number of requests for object classes assigned to server j); and

providing configuration information to a router accessible from said network, said information defining a correspondence between each of said sites and one of said server nodes assigned to one of said groups containing site, said router providing said address of said server node in response to a message specifying said domain name of said site (Abstract, col. 11, line 54 – col. 12, line 63).

However, Yu does not disclose measuring the computational resources required to service said requests to each of said sites over a first time period. In the same field of endeavor, Desai disclose tracking requested objects (resources) that are retrieved from servers and sent to requesting host and monitoring to determine how many cache misses have occurred (col. 3, lines 14-44). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Yu and Desai to include measuring the requested objects required to service the requests to each of the objects in order to determine how many cache missed to require before an object is cached.

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5. As to claim 2, Yu and Desai (Yu-Desai) disclose wherein said router is a Domain Name System (DNS) server (Yu, Abstract).

6. As to claim 3, Yu-Desai disclose wherein said sites return files in response to said requests, and wherein step of measuring said computational resources comprises recording information identifying each returned file, the size of the file, and the number of times that file was returned (Desai, col. 3, lines 14-44 and col. 6, line 62 – col. 7, line 15).

7. As to claim 4, Yu-Desai disclose wherein each of said server nodes comprises a cache memory for facilitating the return of said files in response to said request and wherein said step of grouping said sites also depends on the amount of memory in said cache memory on each of said servers (Yu, col. 8, line 10 – col. 9, line 10).

8. As to claim 5, Yu-Desai disclose wherein said groups are chosen such that said files returned during said first time period more than a predetermined number of times can be stored simultaneously in said cache memory (Desai, col. 3, lines 14-44).

9. As to claim 6, Yu-Desai disclose wherein said measurement of said computational resources further comprises measuring the number of bytes of data returned in response to said requests for each site during said first time period (Desai, col. 6, line 62 – col. 7, line 10).

10. As to claim 7, Yu-Desai disclose estimating the number of bytes of data returned directly from said cache memory in servicing said requests for each site during said first time period (Desai, col. 6, line 62 – col. 7, line 10).

11. As to claim 8, Yu-Desai disclose wherein one of said sites belongs to two of said groups (Yu, col. 10, line 25-42).

12. As to claim 9, Yu-Desai disclose wherein one of said sites belongs to all of said groups (Yu, col. 10, line 25-42).

13. As to claim 10, Yu-Desai disclose wherein said router selects which of said service nodes corresponding to said two groups will service a request for that site (Yu, Abstract, and col. 11, line 54 – col. 12, line 63).

14. As to claim 11, Yu-Desai disclose measuring the computational resources required to service said requests to each of sites over a second time period (Desai, col. 3, lines 14-44); and

grouping said sites into N new groups, by swapping sites between said previous groups, each news group being assigned to a corresponding one of said server nodes such that for each pair of new groups, the difference in the sum of said measured

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computational resources over said second time period is within a second predetermined error value (Yu, col. 9, line 51 – col. 10, line 42).

15. As to claims 12, Yu-Desai disclose wherein said new groups differ from said previous groups by as few site swaps as possible (Yu, col. 10, lines 25-42).

***Response to Arguments***

16. In the remarks, Applicant argued in substance that

17. (A) Prior art fails to teach grouping said sites into N groups, each group being assigned to a corresponding one said server nodes such that for each pair of groups, the difference in the sum of said measured computational resources is within a first predetermined error value

As to point (A), Yu discloses denote  $SA(j)$  as the number of requests for object classes assigned to server  $j$ , and the arbitrator 235 monitors the load of each server and dynamically updates the class-to-server assignment to improve the loading balancing (col. 6, lines 31-36; col. 7, lines 18-37; and col. 9, lines 27-33:).

18. (B) Prior art fails to teach measuring the computational resources required to service said requests to each sites over a first time period.

As to point (B), Desai discloses the caching engine makes an entry corresponding to the requested object in a table in which it tracks objects for which at least one cache miss has occurred an object is only cached if it has been requested at least twice (identifying each returned file); Desai also discloses that determining the size of the requested object (measuring the computational resources) (col. 3, lines 14-44 and col. 6, line 62 – col. 7, line 15).



19. (C) Prior art fails to teach identifying the returned file or the number of times that file has been returned.

As to point (C), Desai discloses the caching engine makes an entry corresponding to the requested object in a table in which it tracks objects for which at least one chase miss has occurred and identifying an object is only cached if it has been requested at least twice (identifying the returned file) (col. 3, lines 14-44 and col. 6, line 62 – col. 7, line 15).

20. (D) Prior art fails to teach step of grouping said sites also depends on the amount of memory in said cache memory on each of said server.

As to point (D), Yu discloses in the step 1040, the upper threshold, TH, of the load on a server is calculated, for example, d can be 0.2, which means, the target for loading balancing is to have none of the servers exceeding 20% of the average. Yu also discloses the loading balancing can be normalized, to reflect the number of requests received, divided by the processing capacity, specifically,  $SA(j)$  (the total number of requests) can be normalized by the processing capacity of server j (col. 8, line 10 – col. 9, line 10 and (col. 9, line 51 – col. 10, line 50).

21. (E) Prior art fails to teach recording the number of times an object is returned.

As to point (E), Desai discloses a caching engine makes an entry corresponding to the requested object in a table in which it tracks objects for which at least one cache miss has occurred, that means an object is only cached if it has been requested at least twice (recording the number of times an object is requested and returned to requestor) (col. 3, lines 14-44).

22. (F) Prior art fails to teach measuring the number of bytes of data returned in services requests for that object.

As to point (F), Desai discloses determining the size of the requested object to decide whether or not to cache that object (col. 6, line 62 – col. 7, line 10).

23. (G) Prior art fails to teach said new groups differ from said previous groups by as few site swaps as possible.

As to point (G), Yu discloses an extension would be allow for a swap or exchange of one Class from server k with another class from server 1 if it can improve the load balance (Yu, col. 10, lines 25-42)

24. Applicant's arguments filed on 02/03/2003 have been fully considered but they are not deemed fully persuasive.

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chau Nguyen whose telephone number is (703) 305-4639. The examiner can normally be reached at 8:00 am – 5:00 pm Mon-Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Powell can be reached on (703) 305-9703. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 746-7239. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3230.

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Any response to this final action should be mailed to:

**Box AF**

Commissioner of Patents and Trademarks

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**Or Faxed to:**

(703) 746-7239, (for **formal communications**; please mark  
"EXPEDITE PROCEDURE").

**Or:**

(703) 746-7240 (for **informal or draft communications**, please label  
"PROPOSED" or "DRAFT").

**Or:**

(703) 746-7238 (for **After Final Communications**).

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal  
Drive, Arlington, VA., Sixth Floor (Receptionist).

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Patent Examiner  
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